

Claims

1. A windshield wiper having a wiper arm, which is driven via a drive shaft and to which a wiper blade is pivotably connected, in which at least one spray nozzle (10) is disposed on a pivotable part (14), the spray nozzle being composed of a plurality of parts and (its housing) (16) communicating disconnectably via a water line (18) to a water pump (118), characterized in that in the housing (16) or in a nozzle body (12) communicating with it, a continuous water conduit (20) connected to the water line (18) is provided, from which a connecting conduit (22) branches off that leads to a spray conduit (24) that is approximately parallel to the water conduit (20) and has a nozzle opening (26), the water conduit (20) being closed on its free end (38).

2. The windshield wiper of claim 1, characterized in that the housing (16) and/or the nozzle body (12) is of plastic, and the nozzle body (12) is clipped into the housing (16).

3. The windshield wiper of claim 1, characterized in that the housing (16) is retained in an opening (34) of a retaining element (14), and the nozzle body (12) has a stub (30) surrounding the connecting conduit (22), with which stub, via a plug connection, it engages the inside of an opening (36) of the housing (16), and the outer part (44) of the nozzle body (12) has a nozzle opening (26) and covers the opening (34) of the retaining element (14).

4. The windshield wiper of <sup>claim 1</sup> ~~one of the foregoing~~

~~claims~~, characterized in that a connection piece (100) to an onward-leading water line (122) or a closure cap (110) adjoins the water conduit (20) on its free end (38).

5. The windshield wiper of claim 4, characterized in that the connection piece (100) is offset-bent.

6. The windshield wiper of <sup>Claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that the nozzle body (12) with the orifice (28) of the spray conduit (24) protrudes in such a way from an opening (34) of the retaining element (11) that the inner wall of the spray conduit (24) or of the nozzle opening (26), which wall is toward the retaining element (14), is flush with the outer wall (46) of the retaining element (14).

7. The windshield wiper of <sup>Claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that the nozzle openings (26) are disposed in the upper region (50) of the retaining element (14).

8. The windshield wiper of <sup>Claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that a plurality of nozzle openings (26) are disposed vertically one above the other.

9. The windshield wiper of claim 9, characterized in that the retaining element (14) has a U-shaped cross-sectional profile, and the opening (34) extends across a part of a leg (52) and a top wall (54).

10. The windshield wiper of <sup>Claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that a ball (48) is press-

fitted with the nozzle opening (26) into a ball seat (56) of the spray conduit (58).

a 11. The windshield wiper of <sup>claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that the orifice of the spray conduit (60) is formed by a stub (62) integrally formed onto the nozzle body (12), onto which stub a nozzle cap (64) that has a nozzle opening (26) is placed.

12. The windshield wiper of claim 11, characterized in that the nozzle cap (66) is of plastic and is clipped onto a ball seat (78) of the stub (74).

a 13. The windshield wiper of <sup>claim 11</sup> ~~one of claims 11 or~~ ~~12~~, characterized in that the nozzle opening (26) is disposed in the region of the outer inner wall (68) of the orifice of the spray conduit (60).

14. The windshield wiper of claim 13, characterized in that the nozzle cap (64, 66), with a guide body (70, 72) that converges on the nozzle opening (26), engages the widened spray conduit (60) on the side of the nozzle cap toward the nozzle body (12).

15. The windshield wiper of <sup>claim 1</sup> ~~one of the foregoing~~ ~~claims~~, characterized in that the connecting conduit (22) and the spray conduit (24) discharge into an annular chamber on the circumference of the nozzle body, and their discharge openings (88, 90) are covered by a diaphragm (80).

16. The windshield wiper of claim 15, characterized in that the diaphragm is a rubber-elastic tubular diaphragm (80) and has beads (92, 94) on its

ends that are embedded in annular grooves (96, 98) of the nozzle body (86).

*a* 17. The windshield wiper of <sup>claim 15</sup> ~~one of claims 15 or 16~~, characterized in that a ventilation bore (84) is provided on the circumference of the tubular diaphragm (80) in the housing (82).

*a* 18. The windshield wiper of <sup>claim 16</sup> ~~one of claims 17 or 16~~, characterized in that the tubular diaphragm (80), after a predetermined opening stroke, is braced on a wall of the housing (82).

*a* 19. The windshield wiper of <sup>claim 16</sup> ~~one of claims 16-18~~, characterized in that the outer diameter of the nozzle body (86) decreases in the region between the annular grooves (96, 98).

*a* 20. The windshield wiper of <sup>claim 16</sup> ~~one of claims 16-19~~, characterized in that the outside diameter of the nozzle body (86) tapers conically toward the water line (18).

*a* 21. The windshield wiper of <sup>claim 1</sup> ~~one of the foregoing claims~~, characterized in that a heating line (116) extends through the water line (18) and the water conduit (20).

*a* 22. The windshield wiper of <sup>claim 1</sup> ~~one of the foregoing claims~~, characterized in that the nozzle body (86) is embodied as a distributor.